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## **CLAIMS**

What is claimed is:

1. Signal processing apparatus comprising: circuitry for digitizing an input signal;

a software linearizer for processing the digitized signal to produce a predistorted RF signal that is to be subsequently amplified to produce a signal that has reduced intermodulation distortion;

circuitry for converting the pre-distorted RF signal to an analog signal; and a nonlinear amplifier for amplifying the pre-distorted analog signal to produce an output signal corresponding to the input signal that has reduced intermodulation distortion.

- 2. The apparatus recited in Claim 1 further comprising:
- an upconverter for upconverting the pre-distorted analog signal;
- a linear amplifier for amplifying the pre-distorted signal;
- a bandpass filter for filtering the pre-distorted signal; and
- a transmit antenna for transmitting the filtered pre-distorted signal
- 3. The apparatus recited in Claim 1 further comprising:
- a receive antenna for receiving the pre-distorted signal;
- a low noise amplifier for amplifying the received pre-distorted signal;
- a downconverter for downconverting the pre-distorted signal; and
- a channel amplifier for amplifying the pre-distorted signal and coupling it to the nonlinear amplifier.
  - 4. The apparatus recited in Claim 1 further comprising:

an upconverter for upconverting the pre-distorted analog signal and coupling it to the nonlinear amplifier;

- a bandpass filter for filtering the output signal having reduced intermodulation distortion; and
  - a transmit antenna for transmitting the filtered output signal having reduced intermodulation distortion.

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5. A pre-amplification linearization method comprising the steps of: digitizing an input signal;

processing the digitized signal to produce a pre-distorted RF signal that is to be subsequently amplified to produce a signal that has reduced intermodulation distortion;

- converting the pre-distorted RF signal to an analog signal; and amplifying the pre-distorted analog signal to produce an output signal corresponding to the input signal that has reduced intermodulation distortion.
- 6. The method recited in Claim 5 wherein the processing step comprises processing the digitized signal using a pre-amplification software linearizer to produce the pre-distorted RF signal.